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GEOGRAPHY

RAILROAD EXPANSION AND AGRICULTURAL SETTLEMENT IN MINNESOTA, 1860–1910

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In the early years of the 19th century, waves of Americans were moving westward through the narrow gaps in the Appalachians and out into the area beyond. In many cases these pioneers settled in the Kentucky Bluegrass or on the plains of central Ohio. Others pushed westward into Indiana and Illinois before laying claim to their land. Many moved into the southern plains west of the Mississippi River and some even streamed into Iowa and Wisconsin to the north.

The early railroads appearing in the 1840's and 1850's in the plains areas to the east of the Mississippi were important forces in both moving and localizing the frontier of that time. As early as 1844 a rail line connected St. Louis to the east and settlers were moving over that route and jumping off from that river port to areas north, south, and west.

The permanent settlement of the trans-Mississippi West which includes the tier of states lying immediately to the west of the river was a complex period in the settlement of the American West. It was an area and time where railway growth both preceded, followed, and occurred simultaneously with the occupance of the land. To the east, major settlement had occurred primarily prior to the construction of most railways, and farther to the west, the long fingers of the railways later extended far in advance of settlement.

Writers who have dealt with the history of this area of transition have often tended to overgeneralize the complex relations which existed in this band of states between railway expansion on one hand and the occupance of the land on the other. A recent American History text states: "Finally, the land-grant roads stimulated settlement west of the Mississippi. Built in advance of the population and often heavily burdened with high construction costs and watered stock. . . ." (Carmen and Syrett, 1956; 2:75.)

There have been a few more detailed studies of the relationship between railways and settlement in the United States. The best example of these is found in the works of Frederick L. Paxon. His writings are the product of an historian rather than of a geographer and his studies, although accurately depicting the growth of rail lines, often

obscure the evolving railway patterns beneath data on railway amalgamations, stock transfers, and other facets of railway development not directly related with spatial factors. One of his studies concerns only the area to the east of the Mississippi—which Paxon defines as the Old Northwest (1911). There are maps provided which trace the development of rail lines in that region, but the relationship of these lines to the evolving settlement pattern is barely touched upon. In another study he is concerned with the disappearance of the frontier in the United States brought about by the extension of the railway lines across the Great Plains and through the mountains to the Pacific coast (1907). Scant attention is paid to the complex relationships which existed in the region immediately to the west of the Mississippi River.

In Minnesota, as one of the states in this transition zone, few large-scale studies have attempted to analyze the expansion of railways and settlement. There has been but one study *exclusively* concerned with these two facets in the historical development of this area. Again the product of an historian, the focus of this study was on the role of the railroads in Minnesota in attracting foreign population to the state to settle on the railway lands (Peterson, 1927). Although there is an attempt to describe briefly the evolution of the railway pattern between 1862 and 1880, the lack of maps renders an adequate conception of this phenomenon impossible. Population statistics, although accurate, are arranged in such a way that it is not possible to grasp the overall relationships which existed between the railroads and settlement.

Ralph Brown in his well-known *Historical Geography of the United States* realizes the complexities which existed. He writes: "The first Minnesota railroads, advancing westward from Wisconsin and northward from Iowa, entered areas already occupied . . . Soon, however, the steel rails were extending beyond the developed regions" (Brown, 1949:349). The obvious implication is that railways developed prior to, concurrent with, and after the settlement of Minnesota. Brown then recognizes the complexities here but the scale of his study prohibits a further examination of what were the exact time and area relationships.

The present paper is an attempt to define more precisely the relationships which existed. Those who have already touched on this problem have generally admitted the complexities of the parallel developments, but only in connection with the particular time or place with which they were basically concerned. Since the movement of settlement across an area is frequently referred to as the advancing frontier, it would be well briefly to discuss this point. Like many of the commonly used historical conceptions, the use of the term "frontier" is often misleading. Probably the best conception of the "frontier," and that which is used here, refers to the edge of permanent settlement. It must be recognized however that there are several types of frontiers which may be defined in such a manner. The most common association in the American mind is probably the "Agricultural Frontier" with which this paper is concerned, but there also existed a "Mining Fronter," a "Grazing Frontier," and the like, each concerned with a

certain economic system. One must also keep in mind that "frontier" also signifies a new enterprise entering an area of an older enterprise, but Waibel has shown that the new development of agriculture in Southern Brazil is a new frontier encroaching on an older type of farming. This conception has no place in the present study. We are here concerned with the progress of agricultural settlement in Minnesota and the relationships which existed between the advance of agricultural settlement and the railways in the state. This edge of agricultural settlement is the agricultural frontier of Minnesota. Since then we regard the frontier in Minnesota to be primarily an agricultural one, it seems most logical to delimit it in terms of rural population rather than total population.

SELECTION OF CRITERIA

The information pertaining to railway growth in this study stems from the author's previous work on the subject (Meeks, 1957). In this earlier work, maps were drawn to represent the extent of railroads at five-year intervals with railway names, mileages added, and related information.

Perhaps the most obvious criterion to be used in delineating the expansion of agricultural settlement in Minnesota would be the use of the data on rural population. The initial difficulty here is the changing census definitions of urban vs. rural, and the problem of whether *rural* is an indication of *agricultural* settlement. Also, while it is true that one can plot the increase in population from one period to the next, the result often shows a greater expansion in previously settled areas than in newly settled ones simply because of the higher number of births in the older more densely settled area. There is, therefore, a non-distinction between new people entering a region, and the increase in population due to natural births in already well-settled areas—this would tend to invalidate any generalizations to be made concerning the actual frontier of new agricultural settlement. To illustrate this point, one needs only to look at the census data for the overall population growth in the state between 1860 and 1880. While there had been an increase of 478,402 by immigration into Minnesota during this period, the increase due to natural births in the area was 362,371, or over ¾ of the total of immigration.

In view of the obvious difficulties inherent in rural population data, their use is rejected in this paper. Thus it is necessary to utilize some index rather than population itself to measure the areal spread of agricultural settlement. The use of cultivated land as an index of agricultural settlement merits certain attention. However, in Minnesota, there is considerably less land under cultivation in the northern part of the state than in the southern. This is a reflection of the poorer agricultural potentiality as well as of the dairying economy and the subsequent greater proportion of the land in pasture. If one were to use the statistics on cultivated land as a measure of settlement, the dairy regions would show proportionally less settlement than their neighboring counties.

The U.S. Census of 1880 was examined to illustrate this. At that

time, Carleton county, in 1880 one of the most northern settled counties in the state, had only 4.7% of its farm land cultivated, Wadena county but 18%. To the south in the better agricultural area both Lyon and LeSeuer counties had over 35% of their farm land under cultivation. This demonstrates that in the poorer agricultural counties the use of cultivated land will tend to show less farming than in better favored areas. Thus the impression will be given of less farms than actually exist, therefore less settlement.

Another criterion examined was the total amount of land in farms irrespective of whether cultivated or not. In 1880, the U.S. Census defined farms as: "what is owned and leased by one man and cultivated under his care. A distant woodlot or sheep pasture even if another subdivision is to be treated as a part of the farm so long as there is a resident overseer or manager." Thus by definition, a prerequisite for a farm (and for the land in a farm) is an owner or other individual *in attendance* on the land reported as a farm. The disadvantage of this criterion is immediately apparent—that is there is no distinction made between an old owner and a new owner from one census to the next. Thus the increases in the amount of land in farms between periods may simply represent the expansion of an already established farm rather than the incorporation and settlement of a new one.

To test this limitation, the increases in farm land from one period to the next were compared with the increases in the number of farms themselves. In all cases examined the increases remained constant between the two. It was thus inferred that the plotting of either the number of farms or the amount of land in farms would yield approximately the same patterns. Therefore plotting the increases in farm land *actually* represents the incorporation of new farms and is a relatively adequate measure of new rural settlement. We must stress that without taking into account the average number of people per farm and the regional inconsistencies which must have existed, the use of this criterion for the representation of the expansion of rural settlement does suffer limitations. The selection of land in farms as our criterion in this paper is not without reservations, but it is felt that it is logically the best index which can be devised within the scope of this study.

PROCEDURES

The increases in land in farms from one decade to the next have been plotted by the use of dots representing absolute gains rather than percentage gains in acreage. Commencing in 1870, each dot represents an increase in farm land of 200 acres over the preceding map. The initial map, for 1860, shows *all* land in farms in that period rather than an increase since it is necessary to establish a base period from which to depict the subsequent growth of settlement as measured by farm land increases.

The data for the increases in land in farms from decade to decade has been plotted on a county unit basis. This was done for two reasons: 1. the time allocated to the project rendered a complete analysis by townships impossible; 2. the uniform size of counties in the

southern part of the state and the relatively dense railway network constructed there enables one to construe a fairly accurate conception of settlement increases. North of a line due west of the Twin Cities township, data might well prove more revealing of the parallel relationships which may have existed, since the size of the counties vary to a much greater extent.

The prepared series of maps traces the development of the two facets of the study through 1910 by which time railway growth had closely approximated its maximum extent, to be reached in 1915, and increases in farm land were confined to poorer areas hitherto neglected during the earlier periods of westward expansion.

In the text, the outstanding relationships or inverse relationships between railway growth and settlement increases are noted on the basis of map examination, and the general development of these are summarized for the decade under analysis. Each map is treated separately in a section devoted to its discussion.

HISTORICAL SUMMARY (See Maps 1-6.)

The initial railway development in Minnesota occurred independently of any connections to the east or south. Early railroad growth radiated outward from the head of Mississippi River navigation at St. Paul in much the same manner as had occurred at an earlier time in Chicago. The first Minnesota railroads prior to 1865 show this radial pattern, and it was not until 1867 that a circuitous route was inaugurated between St. Paul and Chicago through northeastern Iowa. In 1871 a more direct connection was established through Wisconsin.

These first railroads, oriented to the Mississippi River, acted as feeder and dispersion lines for this major transportation artery. Settlers coming up the river from ports to the south which often marked the terminals of railroads from the east, disembarked at St. Paul or the southern Minnesota ports of La Crescent and Winona. Many took passage from St. Paul up the Minnesota River to Shakopee, St. Peter, and Mankato.

Two streams of settlement influenced Minnesota. One originated from the Mississippi River and branched out from the head of navigation at St. Paul and the ports along the river. This stream flowed west, northwest, and southwest into the state, although extensive expansion due west was limited by the Sioux and the prairie. The other penetration of Minnesota came from Iowa rather than from Wisconsin and moved northwards into Minnesota on the fringe of the open prairie in the southeastern part of the state just west of the stream-dissected hills along the Mississippi.

1860:

Since the first railway to be built in the state (which ran between St. Paul and St. Anthony) was not completed until 1862, the map for this period shows no railways. It is evident therefore that at this time the tide of settlement in Minnesota was well in advance of any railway construction. Rural settlement in 1860, measured by the total amount of land in farms was persistently clinging to the woodland

margin of the prairie to the northwest of St. Paul and St. Anthony and in the forest belt extending southwest along the Minnesota River. In the extreme southeastern part of the state, farm land in the hilly area was oriented to the Mississippi River. (See Map 1)

1860–1870:

It is interesting to note that by 1870, railway development still lagged somewhat behind the advancing farming frontier. The best expression of this phenomenon is found in the wedge of settlement enclosed by the two rail lines built from St. Paul to Sauk Rapids and St. Paul to Benson which were completed in July, 1870. These lines, both branches of the old St. Paul and Pacific Railroad (forerunner of the Great Northern) were accompanied by large land grants. The land in pattern of farms, on a county unit basis, demonstrates the rather surprising fact that settlement was located between these lines rather than along them, and that the railroads were built to encircle the settlement area rather than to bisect it. This wedge of settlement obviously does not correlate with the railroad land grants.

Aside from the line of the St. Paul and Duluth Railroad completed in August, 1870, between these two cities, and the lines to Benson and Sauk Rapids, railroad building tended to following the lines of settlement established during the decade prior to 1860. Rapid increases in the amount of land in farms along the southern boundary of Minnesota, especially in the area to the west of Austin and south of St. James, arose largely from the completion of the Southern Minnesota Railroad in 1870 running due west from La Crescent on the Mississippi River.

In general, railroad growth in the period from 1860 to 1870 tended to follow settlement of the earlier decade. The denser network of rail lines in the southeastern part of the state were built to serve the already settled region. Railways to Sauk Rapids, Benson, and St. James generally followed the farmland pattern of 1860 although it has been demonstrated that the lines to Sauk Rapids and Benson tended to encircle rather than bisect the settlement established there. The stated purpose of the line built from St. Paul to Duluth was to connect the head of Mississippi navigation with the Great Lakes, hence it is not surprising that we find a minimum of rural settlement in the heavily-forested poorly-drained land along this particular line. (See Map 2).

1870–1880:

The advancing frontier of agricultural settlement had, by 1880, completely covered Minnesota except for the area comprising the northeastern third of the state. So rapid was the extension of farm land and railways that it is no longer possible to ascertain in a brief glance whether railroad construction preceded, or followed the settlement of this area.

A study of the map illustrates a striking correlation between railroad construction and increases in farm land along the entire western boundary of the state. There can be no doubt that the two factors went hand in hand with each other, but by the same token it is impossible to ascertain which preceded the other, although the greater

amount of railway construction was concentrated in the latter portion of the period.

There are several pronounced regional concentrations of farmland increases within the state. The area to the north and east of Albert Lea, an area south of Pipestone in the southwest, in Otter Tail County east of Barnesville, the region between Ortonville and Benson, and the Red River Valley area north of any railroad construction, all show such gains. In these areas, the map for the next period (1880-1890) shows railroad construction too distinct to be mere accident. Undoubtedly there was ensuing railroad growth in these areas to meet the regional increases evident in the farmland pattern of this decade.

In addition, there were smaller increases in farm land in areas earlier by-passed, including parts of the driftless hill land east of Preston, and parts of the sandy soil areas in Washington and Chisago Counties to the northeast of the Twin Cities. Railroad construction in these areas appears to be parallel with the settlement increases.

To summarize the period, in all probability railway growth and settlement must be considered as either occurring simultaneously with each other, or possibly settlement was still somewhat in advance of railway construction in certain areas (See Map 3).

1880–1890:

After 1880, the last unsettled area of Minnesota consisted of the northern third of the state, and inroads into the agriculturally better portions of that area were being made between 1880 and 1890 in two distinct prongs from the south, one north of Wadena, the other just to the east of Staples. The westward expansion of the "frontier" had by-passed Minnesota and increases in farm land within the state were confined to those areas not previously utilized.

Aside from the settlement increases infringing into the northern counties, the increases in farm land generally took place in areas which on previous maps have shown as regions of smaller relative increases from decade to decade.

In Washington and Chisago counties, rapid increases in settlement took place. The large increases in railroad mileage in this area during the previous decade undoubtedly influenced this new pattern, as did the growth of nearby Minneapolis and St. Paul. As the urban population of these centers increased, a market was created for the agricultural products of the nearby hinterland.

There was an enormous increase in farm land in the northwestern corner of the state in Kittson and Polk counties. Because both these counties are large, the distribution of farmland increase is shown over a wide area but probably 90% of the settlement occurred in the Red River valley in about one third of the total land area. All but one of the rail lines shown were constructed after 1885, but on the basis of this map we must conclude that the railway construction and the increases in farm land in the area occurred relatively simultaneously with each other.

Two strips of land radiating from the Twin Cities were also more heavily settled during this decade. One strip grew along a line reach-

ing northwest from St. Paul and Minneapolis and followed a route between the towns of St. Cloud to the northeast and Benson to the southwest; the other band of settlement extended from south of Glencoe and Shakopee due westward. Both these strips of high increase in land in farms follow the rail lines constructed during this period. In general a remarkable parallel relationship is evident.

This decade also saw the growth of the first rail lines built into northern Minnesota. One to Grand Rapids, built in 1889, was to connect with the route being constructed east of Fosston. The other line was built from Duluth to Two Harbors, and Ely in 1888 to serve primarily as a lumber road, but was soon to take on new significance with the opening of the iron ranges.

In general, in already settled portions of the state, railway construction seems to have occurred simultaneously with increasing settlement. By the close of the decade, the two aspects of this study, railway expansion and settlement growth have become so interwoven with each other that it is no longer possible to determine any cause and effect relationships, although it is evident that rather close parallels must exist.

Most settlement in this period was in areas earlier bypassed, and railroad construction was an intensification of the network already established. The relationships in the four areas discussed are too striking to be coincidence, and we must conclude on the basis of the 10-year interval analysis that rail lines were constructed roughly contemporaneously with the increases in farm land (See Map 4).

1890–1900:

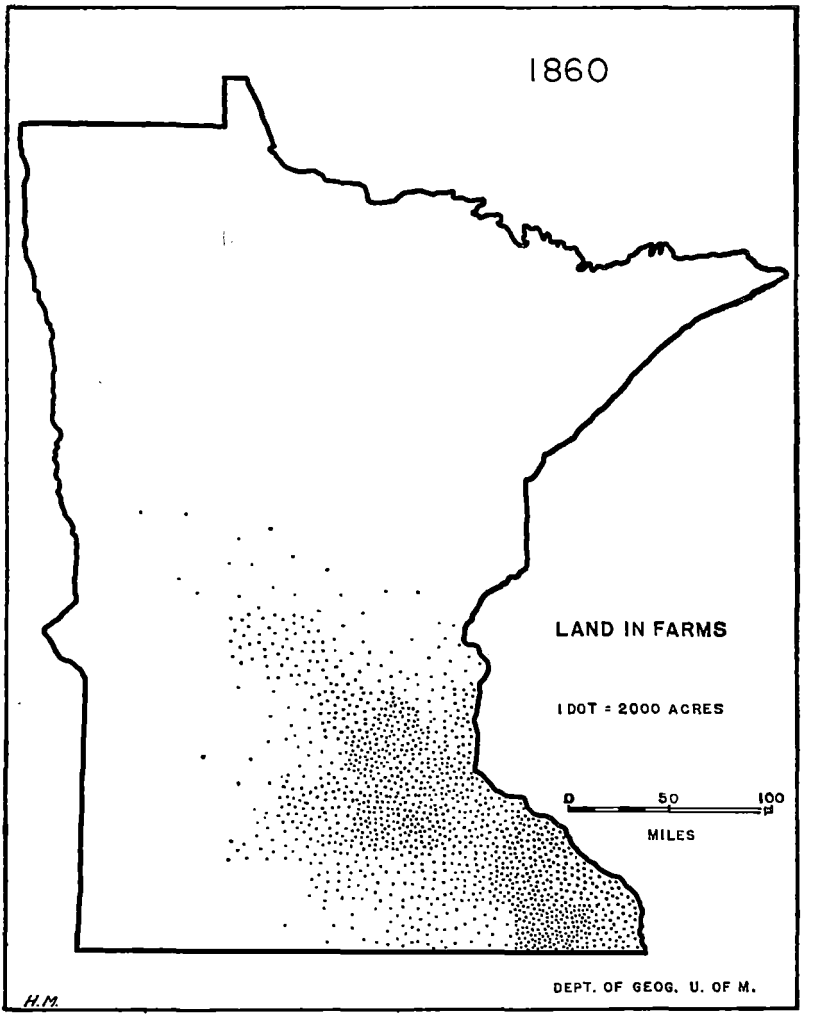
On the map for the preceding decade it was noted that there were two prongs of settlement penetrating northern Minnesota. On the present map for 1890–1900 both these concentrations of increase are represented by completed north-south railways, one from Wadena to Walker completed in 1895, and the other from Brainerd to Walker also completed in 1895. In this case settlement *preceded* railroad construction.

North of Thief River Falls, settlement in Roseau county is quite evident. In the subsequent map for 1900 to 1910 this region is traversed by a rail line connecting with the Canadian National south of Lake of the Woods. Again in this case, railway mileage increase occurred *after* heavy settlement in the area.

In Isanti and Kanabec counties north of Anoka, increases in farm land appear to be contemporaneous with a rail line built in 1898. In the southern part of the state there is also a remarkable relationship between settlment increase and railway growth.

The iron mines of northern Minnesota were first being operated during this period, and this is reflected by the concentration of railway construction in the Virginia area.

The map for this period is cited as an example that causal relationships no longer exist in the determination of areas of settlement or railroad routes. Illustrated on the map are two cases in which settle-


1860
LAND IN FARMS
1 DOT = 2000 ACRES
0
50
100
MILES
H.M.
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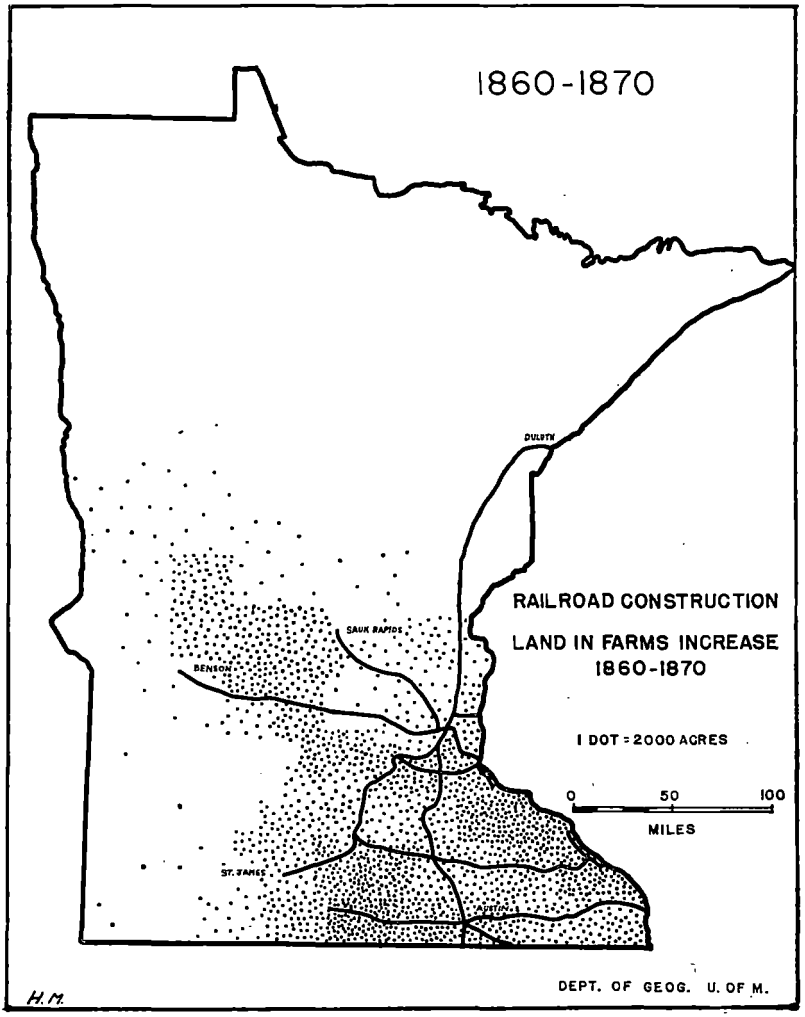
1860-1870
DULUTH
SAUK RAPIDS
BENSON
ST. JAMES
AUSTIN
RAILROAD CONSTRUCTION
LAND IN FARMS INCREASE
1860-1870
1 DOT = 2000 ACRES
0
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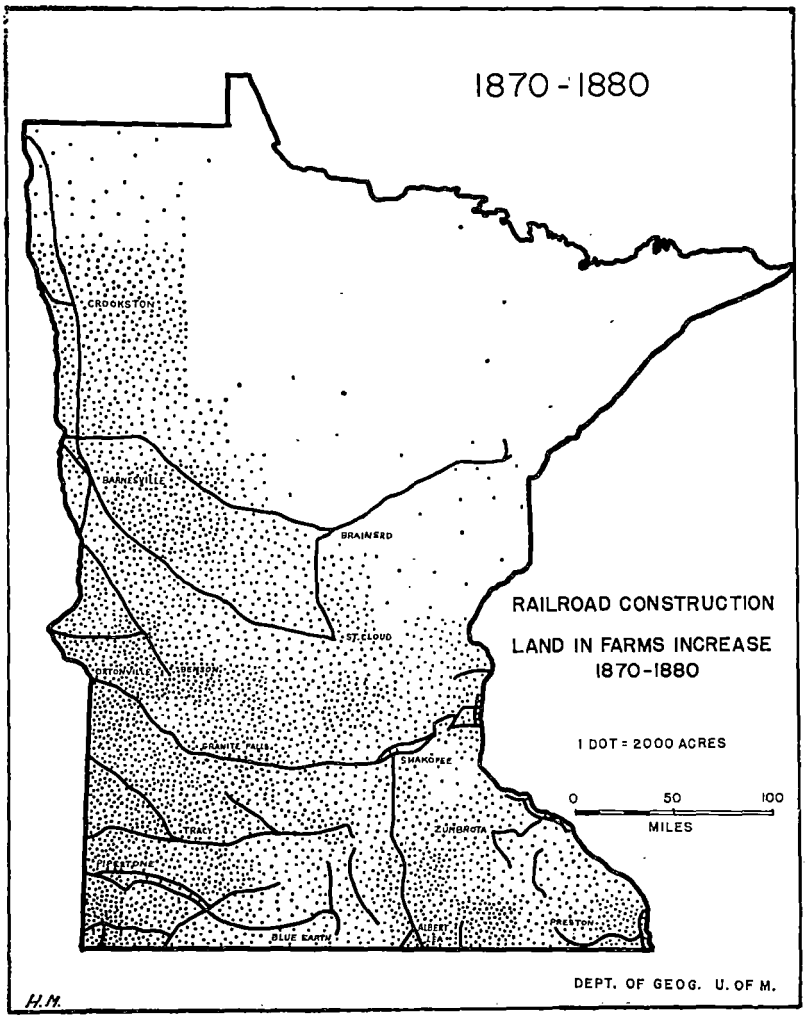
1870 - 1880
CROOKSTON
BARNESVILLE
BRAINERD
ST. CLOUD
FERGUS FALLS
SLAYTON
MORTON
TRACY
FIRESTONE
BLUE EARTH
ALBERT LEA
PRESTON
RAILROAD CONSTRUCTION
LAND IN FARMS INCREASE
1870-1880
1 DOT = 2000 ACRES
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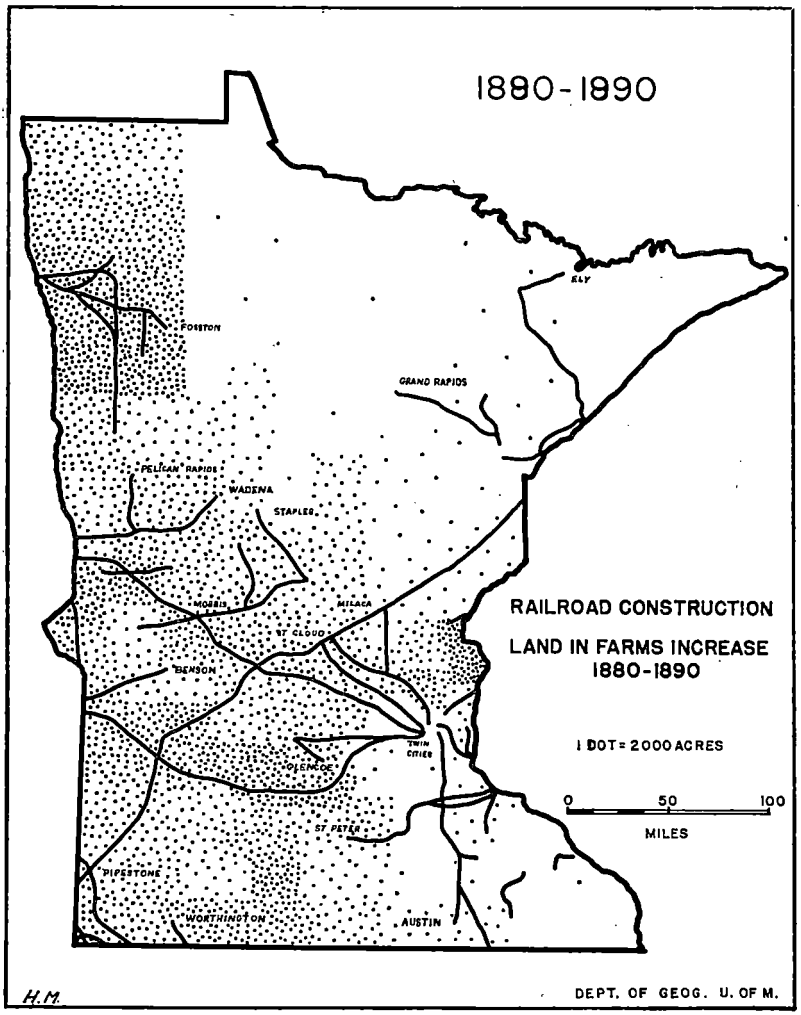
1880-1890
RLY
FOSSTON
GRAND RAPIDS
PELICAN RAPIDS
WADENA
STAPLES
MORRIS
MILACA
ST CLOUD
BENSON
TWIN CITIES
OLEMOCE
ST PETER
PIPESTONE
WORTHINGTON
AUSTIN
RAILROAD CONSTRUCTION
LAND IN FARMS INCREASE
1880-1890
1 DOT = 2000 ACRES
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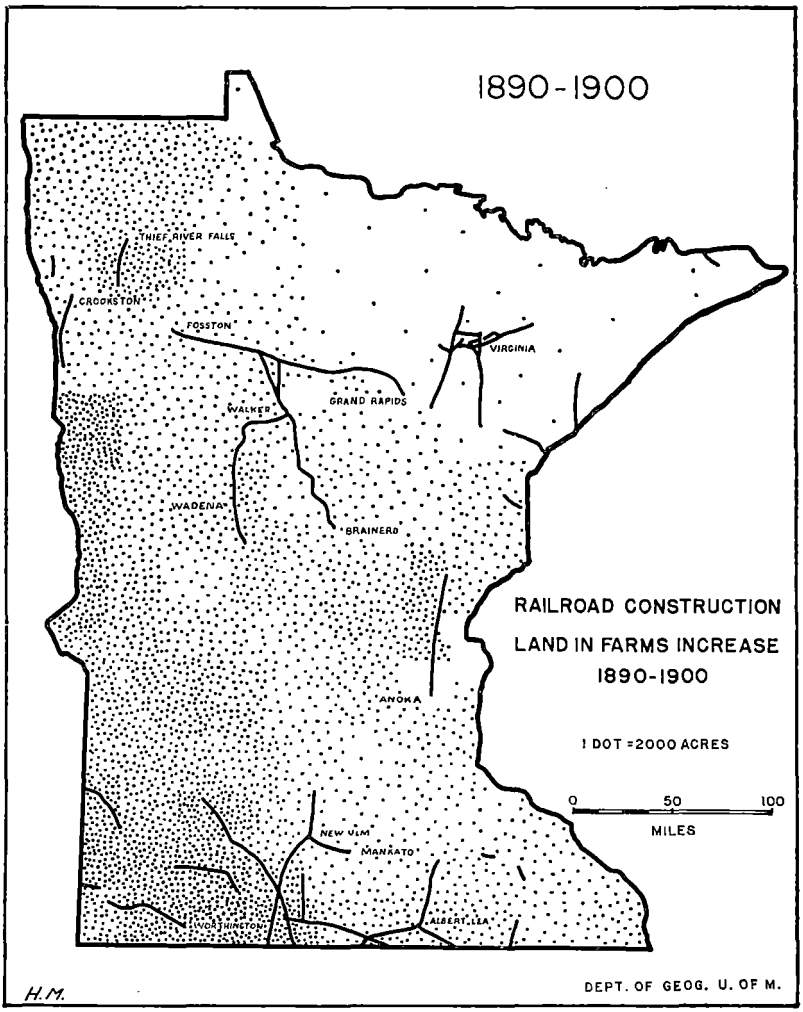
1890-1900
THIEF RIVER FALLS
CROOKSTON
FOSSTON
VIRGINIA
GRAND RAPIDS
WALKER
WADENA
BRAINERD
ANOKA
NEW ULM
MANKATO
ALBERT LEA
RAILROAD CONSTRUCTION
LAND IN FARMS INCREASE
1890-1900
1 DOT =2000 ACRES
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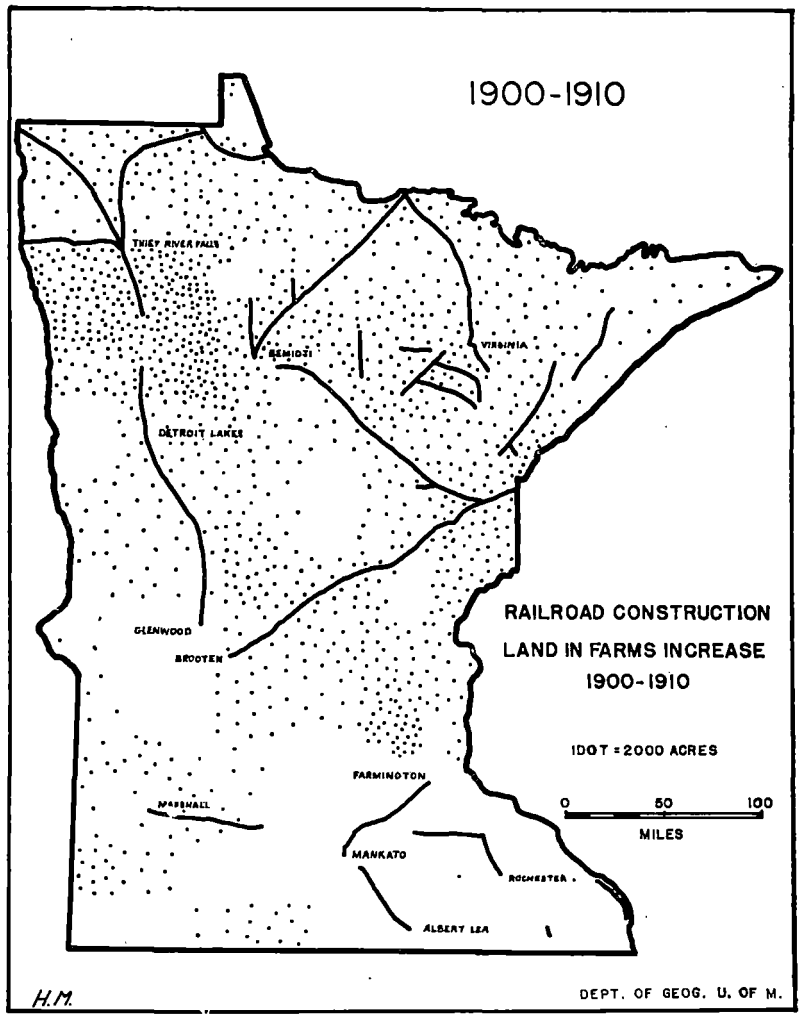
1900-1910
THIEF RIVER FALLS
BEMIDJI
VIRGINIA
DETROIT LAKES
GLENWOOD
BROOTEN
FARMINGTON
MARSHALL
MANKATO
ROCHESTER
ALBERT LEA
RAILROAD CONSTRUCTION
LAND IN FARMS INCREASE
1900-1910
1DOT = 2000 ACRES
0 50 100
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ment growth *preceded* railway construction and two cases where the two probably developed simultaneously.

The movement of rural population into northern Minnesota was occurring very slowly during this decade and cannot be compared either in magnitude or speed with the stream which overswept the prairies at an earlier date. Railway construction still bore a relationship with population increases but the relative importance of the railway as a determinant force had declined (See Map 5).

1900–1910:

The railways built between 1900–1910 may have been an important force in localizing farm populations in the northern part of the state. If data were mapped on a township basis rather than a county basis, it might be apparent that the farmland acreage in the northern area would be concentrated along the rail lines leading to International Falls and other towns.

Continued expansion of railways in southern Minnesota bore no connection to increased settlement. Undoubtedly there are many other factors at work which are beyond the scope of this paper.

By 1910 most potential farming land in the state was appropriated. Five years hence, in 1915, the total mileage of railways in Minnesota began to decline (See Map 6).

CONCLUSION

The problem in this discussion was to determine the relationships, if any, which existed between railway expansion and agricultural settlement in Minnesota. It is initially apparent that one cannot broadly generalize the relationships which have been demonstrated, since it has been shown that depending both on the area and time involved, railway construction preceded, followed, and occurred contemporaneously with settlement. There are, however, a few valid generalizations which can be applied to these phenomena if care is taken in confining the analysis to a certain area and certain time.

Concerning the occupance of the land, the five decades treated here may be divided into three distinct periods: one prior to 1880 when the frontier was actively moving westward, a second division which represents the filling up process which followed the western expansion, when land hitherto neglected was assimilated into farms; and third, the period commencing in 1900 when the last frontier of Minnesota—the north country—began to feel the impact of farming settlement.

The first period is the one permitting some accurate generalization. The basic fact, as demonstrated on the maps for 1860 and 1870, showed that in Minnesota the 1870 frontier was preceding the railroads. Railway construction was generally following the pattern of settlement depicted on the map for 1860. There is also a strong suggestion that at least in one case the railroad land grants were not the first areas to be settled. By 1880 the increasing settlement was largely confined to the western boundary of the state and a remarkable relationship was evident between this increase and railroad expansion.

After 1880, settlement in Minnesota occurred largely in areas earlier bypassed and the parallel relationships of the railroads to the increasing land in farms pattern was evident. There are several examples of strong correlation between these two factors, but there is no longer the apparent *causal* relationship that settlement inevitably tended to promote railway expansion. It is still evident however even as late as the 1880's that settlement was still a potent consideration in the location of the new railroad lines.

By 1900 most of the better land in the state was in farms, and only then did the northern sections see any increases in rural population. Because of the greater size of the northern counties in Minnesota, only an approximation of the areas of settlement can be shown, but the majority of the farmlands were undoubtedly adjacent or close by the railroads constructed into that region. It is also apparent even after 1890 that the direct relationships which had existed between farmland increase and railroad construction were lessening as other external forces became more pronounced.

The settlement of the trans-Mississippi West was a period of many facets, and was characterized by enormously rapid changes in the occupance of the land. Doubtless, the influence of the railroad was a primary force in the settlement of the country in question, but one must guard against over-simplified generalizations to explain the inter-relationships which existed between settlement and the railroads. This paper has attempted to demonstrate the complexity of the period as well as the significant part that the railroad played in the opening of but one small part of the Western United States.

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